the last ecdysis were taken. These closely resembled the adult in form and ground color, but differed in having no red or roseate markings whatever. Labrum marked as in adult, but antennae green instead of pink; and each segment margined with piceous.

This species feeds largely upon lamb's-quarter, *Chenopodium album*, and furnishes an interesting example of protective coloration, in that green and roseate markings of plant and insect are almost identical. The insect, therefore, is not readily perceived at rest upon this weed.

Two males, three females (Ford county) one male, two females (Hamilton county) one female (Russell county).

Aeoloplus.

A. regalis Dodge.— The variation among the specimens before us is very slight, being limited to shades of coloration, and the markings of hind femora. They conform with Scudder's description. The range of coloration was noticeable, the green varying from light to dark green. One exceedingly light colored female had doubtless been taken soon after last moult. The ground color varies from testaceous to greenish yellow.

Of the femur Scudder says "testaceous yellow with two broad angulate and sagittate bands darkest above;" our specimens present these features and in addition a basal spot which sometimes takes the form of a third oblique stripe. In some these angular bands fuse so as to cover almost the entire surface of the femur. The pallid base of hind tibiae mentioned by Scudder takes in our specimens the form of a clearly defined annulus.

Fourteen males, four females (Ford county) one female (Russell county). July: common both in pastures and cultivated crops, a rather late species being most abundant in August.

AMERICAN FOSSIL COLEOPTERA REFERRED TO THE SCOLYTIDAE.

BY A. D. HOPKINS, MORGANTOWN, W. VA.*

I have been greatly interested in studying the tertiary Scolytids and the work of a prehistoric beetle in wood from interglacial clays,† which you so kindly intrusted to me for that purpose.

At best the Scolytidae are a troublesome lot to study, even with a large series of perfect specimens, and it is often quite difficult satisfactorily to refer the species to their natural position.

Therefore when we come to deal with partially preserved remains and impressions of forms which were buried in the mud of tertiary lakes, it

* In a communication to S. H. Scudder.

† The results of the examination of the fossil Scolytid borings will be published elsewhere.— S. H. S.

is not to be expected that anything very definite can be determined regarding their specific, generic, or even group positions At first glance it seemed a hopeless task to even approximate an opinion which would have any value. Yet, with a certain familiarity coming from a special study of existing forms, it is remarkable what one of these little dark spots and fragmentary impressions in the rocks will reveal. The outlined form, distorted as it may be, suggests a possible affinity. A peculiar arrangement of elevations (representing punctures or depressions in the prothorax or elytra), and depressions, representing in a like manner elevations, give a clue to some general characters; obscure lines become distinct and represent the position of sutures, and the comparative length of segments; faint symmetrical depressions indicate the form of the eyes; finer details, as punctures, rugosities, striae, and interspaces become more and more distinct, and we are reminded of similar characters in existing forms. After measuring, magnifying, sketching, and comparing, the perfect form is resurrected in our mind, and we have a basis upon which to form an approximate hypothesis of the position the individual would hold among the living descendants of the primitive division it represents.

The results of my studies of the five specimens of fossil beetles, including the types of your *Dryocoetes carbonarius*, *Dryocoetes impressus*, and *Hylesinus extractus*, may be indicated as follows:

No. 3999. *Dryocoetes carbonarius* Scudd. *Type*: from "Crossing Green Riv. Un. Pac. R. R." This seems to me not to belong to Dryocoetes, but to represent an extinct genus of doubtful group or even family position, although it appears to come closer to the Scolytidae than to the Curculionidae or Ptinidae, to both of which there is some suggestion of affinity.

The absence of antennae, legs, abdominal segments, and the tip of the elytra leave only the evident double or divided eye, the longitudinal rugosities and punctures of the prothorax, the faintly defined punctures of the elytra, and the obscurely outlined form, to suggest its family, group, or generic position.

The longitudinal rugosities of the thorax suggests an affinity to some Bothrosterni (Cnesinus), while the divided eyes would place it in either Hylesinides near Polygraphus, or Corthylides near Trypodendron (Xyloterus). This combination of characters would certainly exclude it from any Scolytid genus known to me.

No. 44 (15218) *Dryocoetes impressus* Scudd., *Trypodendron impressus*, (Type), and the attending series, 4048, 4009, under the same name, and all from "Crossing Green River, U. P. R. R., Wyoming," evidently represent one species, which is distinct from, and apparently allied to the preceding.

The longitudinal rugosities of the prothorax are much stronger and the punctures of the elytra, striae, and interspaces (represented by elevations) are of equal size, much more distinct, and

arranged in approximate rows, while the elytra (type) are plainly narrowed towards the tip. These characters seem to be sufficient to exclude it from the Scolytidae, and to point to the Ptinidae as the family to which it may more properly belong. If so, it would come close to your *Anobium ovale* and *Anobium deceptum* (Figs. 1 and 18, Pl. 8, Tert. Ins. N. A.) with which the elytral punctures agree almost exactly. By reference to the descriptions and figure of *Polygraphus wortheni* Scudd. (Tert. Rhynch. Col. p. 158, Pl. XII, Fig. 13), it would seem that this, too, would belong to the same division of the Ptinidae, since the elytra narrowing towards the tip, the form of the prothorax, and the rather coarse, confused punctures of the elytra would remove it from Polygraphus.

5647. *Hylesinus extractus* Scudd., Type. "Florissant, Col." This is a true Scolytid, and belongs in the *Hylesinides*, which, according to my present arrangement includes subgroups *Phloeotribi*, *Polygraphi*, *Hylurgi* and *Hylesini*.

The granulated surface of the prothorax, referred to in the description, evidently represents slightly rugose dense punctures, especially on the side. The elytral sculpture is obscure, yet it plainly indicates an elevated rugose base common to the *Hylesinides*. The first four abdominal segments are, upon close examination under the microscope ($\frac{1}{2}$ inch objective), quite clearly defined, and show that they gradually decrease in length from the first to the fourth, as in Polygraphus, but quite different from Hylesinus, in which the first and second are longer, the third and fourth short. Upon careful examination, it is also noted that the eyes are divided and close to the base of the

Hylesinus extractus Scudd.

mandibles, as in Polygraphus. It, therefore, appears to belong near Polygraphus, but probably represents an extinct or undiscovered genus.

Your (8068) *Cytilus dormiscens*, Plate 1, Fig. 1, Tert. Rhynch. Col.,

seems from the figure to come very close to this species, especially in the form of the prothorax and the divided eyes. I might also add that fig. 11 of the same plate (*Cratoparis arcessitus*, No. 185) resembles somewhat Phlocosinus as does fig. 4, pl. IX. (*Exomias obdurefactus*. No. 1005), except that in the latter the eyes are divided.

THE SPECIES OF HADROTETTIX, A GENUS OF OEDIPODINAE.

BY SAMUEL H. SCUDDER, CAMBRIDGE, MASS.

Hadrotettix was established in 1876, on a clumsy, strikingly banded Oedipodine with long and rather coarse antennae, from the Arkansas River, described by Say as *Gryllus trifasciatus* and figured in 1828 in his American Entomology. No species has since been added to the group,* although one from Nebraska has been catalogued by Bruner on several occasions. I have for some time had in my collection a Mexican species of very different appearance, so far as the markings of the wings go, and recently Mr. Morse has brought from California still another widely different species. Accordingly I append descriptions of the two additional species, leaving that named by Bruner to be described by him. The four species known to me may be separated by the following table: —

Table of the species of Hadrotettix.

a^1. Wings crossed by a broad fuscous band, as broad as the metazona, and following the hind border nearly to the anal angle; hind tibiae coral red.

b^1. Band of wings with no taenia directed toward the base in the humeral field . . . *trifasciatus*.

b^2. Band of wings sending a humeral taenia at least one third the distance toward the base of the wings . . . *gracilis*.

a^2. Wings crossed by a narrow band not following the hind border toward the anal angle, or by a mere cloudy infuscation.

b^1. Nearly the whole apical half of tegmina membranaceous, the dense reticulation of the base extending but little beyond the middle; wings crossed by a distinct narrow fuscous band with a humeral taenia; hind tibiae greenish yellow . *mundus*.

b^2. Only the apical fourth of tegmina membranaceous, the rest densely reticulated; wings merely obscured with fuscous clouds just beyond the middle and on the hind border; hind tibiae reddish yellow . . *nebulosus*.

Hadrotettix trifasciatus.

Gryllus trifasciatus Say, Amer. ent., iii., pl. 34 (1828).

Oedipoda trifasciata Walk., Cat. Derm. salt. Brit. Mus., iv, 729 (1870).

*Thomas, however, twice described the original species under new names.